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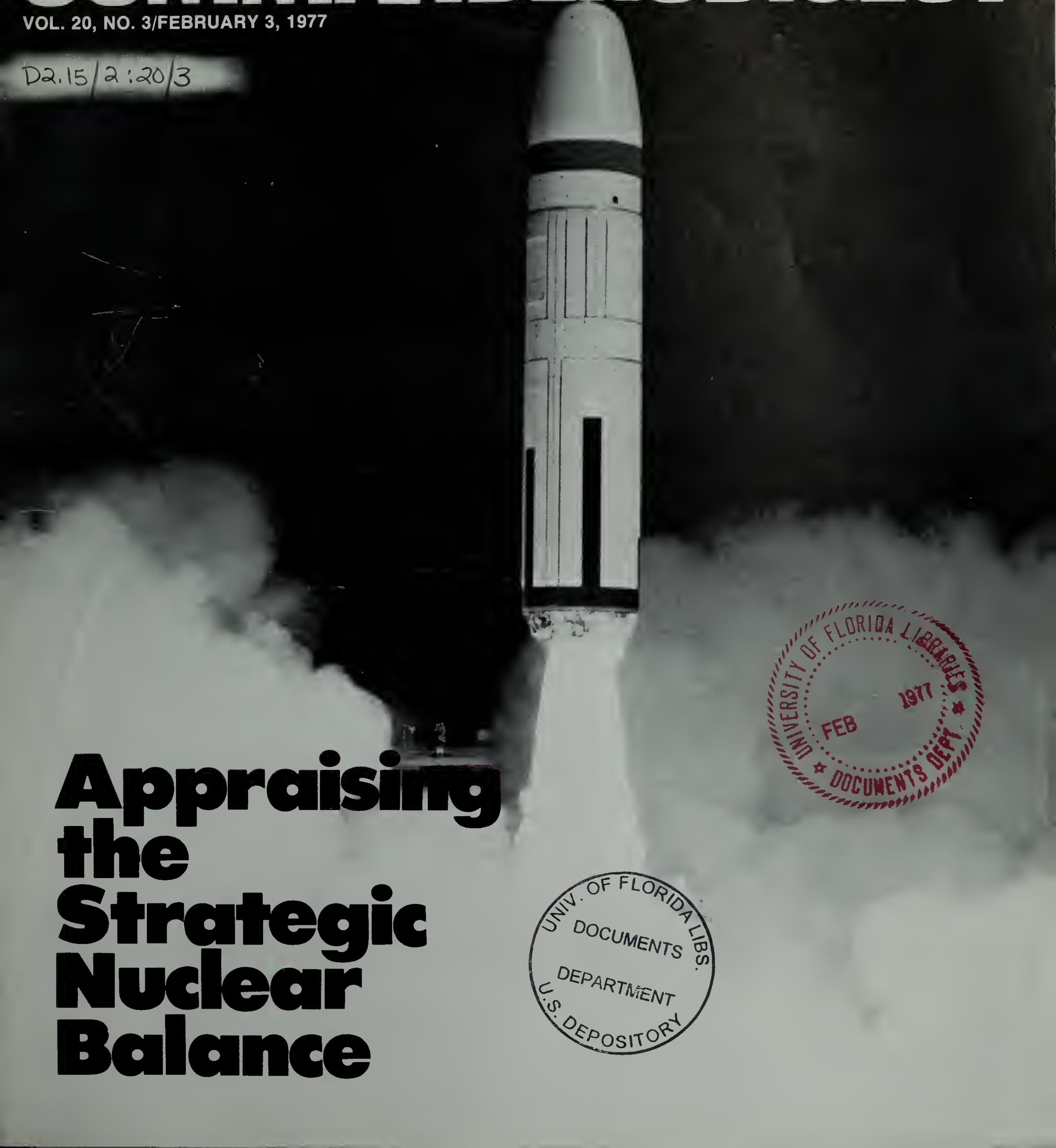

Appraising the Strategic Nuclear Balance

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DEFENSE NEWS BRIEFS

DoD and Metric

The Department of Defense is "going metric" gradually in order to keep in step with American industry and to conform to Public Law 94-168 which calls for increasing use of the metric system.

DoD Directive 4120.18 establishes the basic policy for using the metric system in design of new weapons and equipment provided there are no significant technical or cost penalties. But the Jan. 3, 1977 directive discourages the conversion of existing designs.

Besides fostering a climate for metric conversion, DoD hopes metric usage will permit more effective NATO standardization, as the United States is the only non-metric member of the Alliance.

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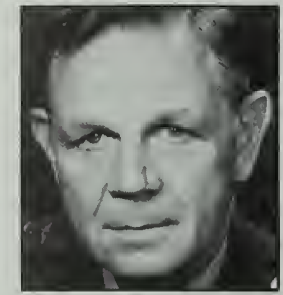
Defense Logistics Agency

Defense Supply Agency (DSA) changed its name to Defense Logistics Agency (DLA) Jan. 1, 1977 because its responsibilities have increased beyond those associated with "supply." Responsibilities now include about 50 per cent of all items used by the military services, such as worldwide fuel distribution, subsistence, property disposal, contract administration, a logistical center, industrial plant and equipment center, and a documentation center.



LT. GEN. VAUGHN, USA

DLA has a $5.9 billion annual procurement volume and an organizational size of some 48,000 military and civilian employees.

No change is expected in its headquarters location at Cameron Station, Va., or its director, Lt. Gen. W.W. Vaughan, USA.

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Defense Health Council

The Department of Defense Health Council has been established as a coordinating mechanism for planning, programming, and evaluating continental U.S. health care, including CHAMPUS.

Under the chairmanship of the Assistant Secretary of Defense (Health Affairs), the council includes the Surgeons General of the three military departments, representatives of the Joint Chiefs of Staff, and of the Uniformed Services University of the Health Sciences.

The council was established Jan. 3, 1977 as recommended by the recent OMB-HEW-DoD Military Health Care Study.

The Chairman is to report to the Secretary of Defense within one year on the council's activities, including recommendations for continuing the council or adopting an alternative arrangement to meet objectives.

APP

The Soviet Union continues to pose the most serious and a most formidable strategic threat to the United States. During the past year, the Soviets have continued their broad-based efforts to acquire more powerful and more effective strategic forces. Upon completion of the current programs in the early 1980s, the Soviets will have achieved significant improvements in their strategic forces. Intercontinental ballistic missiles (ICBMs) and submarine launched ballistic missiles (SLBMs) will have improved accuracy, the number of reentry vehicles (RVs) will have been increased and force survivability will be improved. Air defense, including antisatellite and anti-ICBM capability, is being improved. Their capability for antisubmarine warfare is being increased. Added to the above is an extensive civil defense program.

The Soviets continue an aggressive program of upgrading their ICBM capability by replacing older systems with improved missiles possessing greater reliability, range, payload and accuracy. A very active test program provides ample evidence that further ICBM improvements are being pursued. Missile survivability is being enhanced by the hardening of silos, communications, and command and control facilities. In parallel with these efforts, they are continuing work on mobile basing concepts.

The Soviet nuclear powered ballistic missile submarine (SSBN) force continues to grow in size and overall strike capability. The Soviets may be developing a new SSBN. Two new types of SLBMs are being flight tested. Both missiles are equipped with a post boost vehicle (PBV), but so far, only one has been tested with multiple independently targetable reentry vehicles (MIRVs).

The Soviets are continuing modernization of their strategic bomber force with production of the multi-purpose Backfire bomber. In addition to the Backfire, Soviet officials have alluded to the development of an even newer bomber. Based on past Soviet development programs, we would expect that any new bomber program would require about five years from prototype fabrication to operational deployment.

In the strategic defense area, the Soviets continue to support a broad array of programs. The antiballistic

RAISING THE STRATEGIC NUCLEAR BALANCE

BY GEN. GEORGE S. BROWN, USAF

Chairman, Joint Chiefs of Staff

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missile (ABM) system is still deployed. Also, the Soviets may be developing a capability to attack our satellites.

The strategic forces of the People's Republic of China (PRC) remain relatively insignificant when compared to those of the United States and the Soviet Union. The PRC strategic forces probably are now directed primarily against the Soviet Union. Work is being done on weapons that could pose a threat to the continental United States, but these are several years away. There have been no significant changes detected over the past year in PRC strategic programs.

U.S. Nuclear Strategy

The basic military goal of the United States is to deter armed conflict. In support of this goal, our nuclear strategy is to maintain nuclear stability through a clearly perceived essential equivalence in strategic nuclear forces. By this equivalence, we expect to deter the use, or the threat of use, of nuclear forces agains the United States, our deployed forces, our Allies and other nations considered essential to our security. We seek to create a situation where the Soviet Union will not gain an advantage from the initiation of strategic nuclear warfare.

Strategic nuclear offensive forces are a critical element in the U. S. deterrent strategy. They must have and be perceived to have the selectivity and flexibility to respond immediately to any level of aggression. They must be flexible enough to ensure conflict termination at the lowest feasible level on terms acceptable to the United States, should deterrence fail. Inherent within this strategy is the need for sufficient weapons possessing required qualitative characteristics to maintain a stable strategic balance in the face of Soviet technological advances. U.S. forces to support our strategy are to a large degree influenced by the characteristics and magnitude of the Soviet force programs. A major problem therefore is accurate assessment of Soviet capability and growth, and the application of resources to counteract that capability.

Emphasis must continue to be placed on planning and developing strategic offensive forces which are capable, survivable, and versatile. The United States "TRIAD" of land and submarine launched ballistic missiles (ICBMs and SLBMs) and strategic bombers provides these unique characteristics.

Strategic defensive forces combine with offensive forces to support the deterrent strategy. Strategic defensive forces include those whose mission is air defense, air and missile surveillance and warning, and space surveillance. During peacetime these forces have the mission of preserving the territorial and aerospace integrity of the United States.

Programs have been initiated to improve ICBM survivability, to improve the SSBN force to protect it from Soviet technological breakthroughs, and to improve the bomber force. These programs are vital to maintaining essential equivalence.

Strategic Negotiations

Prior to my assessment of the strategic nuclear capabilities of the Soviet Union and the People's Republic of China, and of our efforts to meet these challenges, a few words on strategic arms negotiations are appropriate.

In the Strategic Arms Limitation Talks (SALT), the United States seeks to reduce the likelihood of nuclear war and to reduce expenditures for strategic arms. The Joint Chiefs of Staff support SALT agreements which are simple, verifiable, and based on equal aggregates of strategic nuclear systems with full freedom to mix these systems within the agreed total.

A SALT II agreement, based on the Vladivostok Understanding of November 1974, would represent a significant milestone in arms limitation. The Understanding provided for:

- An equal aggregate level of 2,400 strategic nuclear delivery vehicles for each side.
- An equal aggregate level of 1,320 ballistic missile launchers equipped with MIRV warheads.

These limits would provide the necessary freedom to structure strategic forces so that our deterrent capability would not be impaired. The limits would require the Soviets to dismantle some of their systems in order to comply with the 2,400 aggregate ceiling. They would also provide a basis for negotiating reductions in the level of strategic nuclear forces. The Joint Chiefs of Staff actively support this objective.

Pending outcome of the SALT II negotiations, we have continued to plan our forces within the bounds of the Vladivostok Understanding, the Interim Agreement on Strategic Offensive Arms and the 1972 ABM Treaty with its 1974 Protocol. The Interim Agreement is scheduled to expire on Oct. 3, 1977; it is my understanding that its relevant provisions are to be incorporated into a SALT II agreement prior to that time. If a new agreement cannot be negotiated in sufficient time, consideration should be given to extending the Interim Agreement.

ICBM Forces

Any discussion of ICBM forces must be prefaced with those legal constraints imposed by the SALT I Interim Agreement on Strategic Offensive Arms.

The interim agreement prohibits the start of any construction of additional fixed, land-based ICBM launchers after May 26, 1972. Modernization and replacement of launchers is permitted provided that silo dimensions are not increased more than 15 per cent. The agreement also prohibits conversion of any older ICBM launchers deployed prior to 1964 (e.g., the Soviet SS-7 and SS-8, or the U.S. Titan II), or launchers for "light" ICBMs (e.g., the Soviet SS-11, the U.S. Minuteman), into launchers for "heavy" ICBMs deployed after that time (e.g., the Soviet SS-9 and SS-18).

As a result, the fixed, land-based intercontinental ballistic missile force was limited to 1,054 launchers for the United States and 1,607 for the Soviet Union. The protocol to the interim agreement, however, permits each side to increase its number of SLBM launchers from 656 to 710 for the United States, and from 740 to 950 for the Soviet Union, provided that an equal number of older ICBM launchers deployed prior to 1964 or SLBM launchers on older submarines are dismantled or destroyed.

The Soviets have exercised this option to add to their SSBN fleet and as a result are currently reducing their ICBM force. This reduction represents a decrease in the number of SS-7 and SS-8 launchers. In a SALT II agreement, based on the Vladivostok Understanding, it would not be necessary to dismantle or destroy older ICBMs in order to add additional SLBMs, provided that the aggregate limit of 2,400 strategic nuclear delivery systems (ICBM launchers, SLBM launchers, heavy bombers) is not exceeded. Construction of additional fixed land-based ICBM launchers, however, would not be permitted.

The Soviets now have more than 1,500 ICBM launchers at operational complexes. The launcher figure is somewhat reduced from last year due to the dismantling of SS-7 and SS-8 launchers in accordance with the interim agreement provisions.

The Soviet deployment program for new ICBMs is beginning its third year. The new Soviet ICBMs are more accurate than the systems they are replacing. Moreover, these accuracies are expected to improve further as the Soviets continue their test programs and

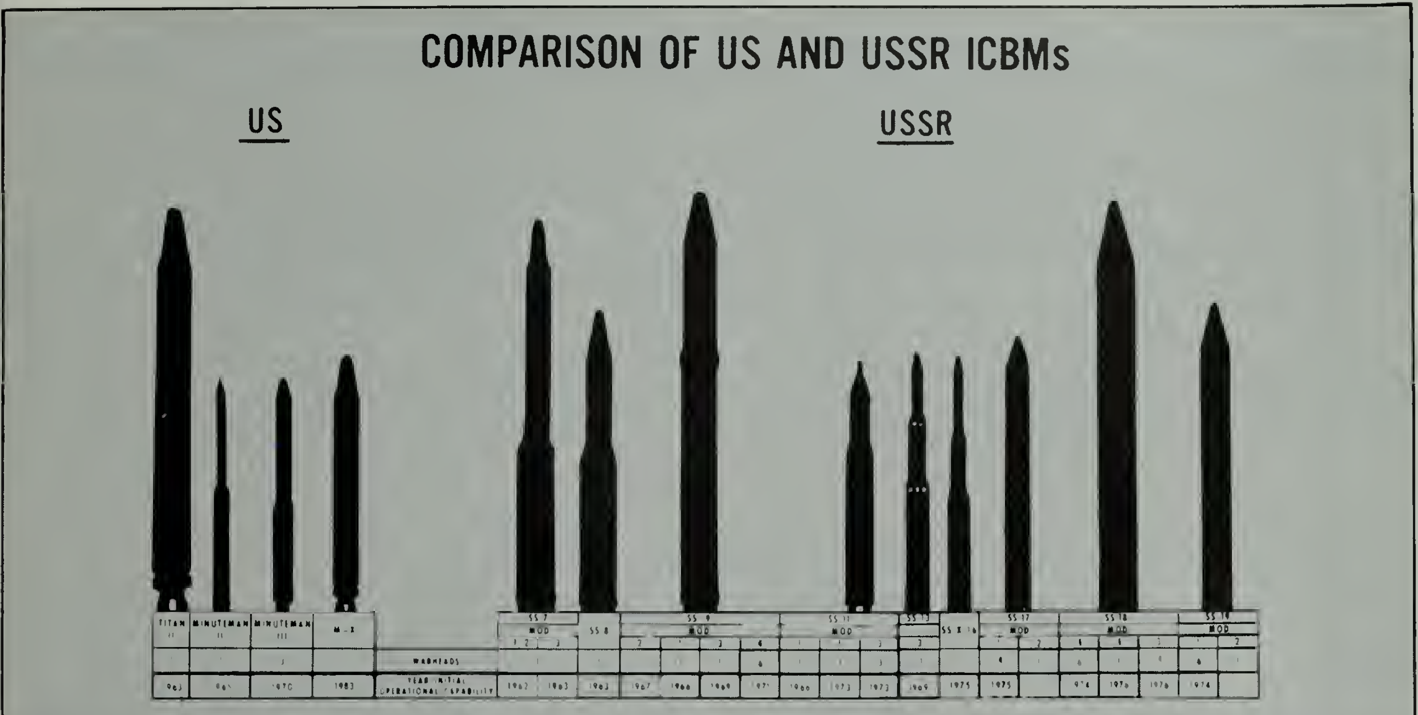


CHART 1

refine and modify selected missile components.

The Soviets simultaneously are pursuing a number of initiatives which will improve the survivability of their ICBM force. The newly deployed missiles have silos with substantially greater structural hardness than the ones they are replacing. This emphasis is also evidenced in the continued construction of hardened launch control facilities. The Soviets have also undertaken to insure the survivability of their communications systems through hardness and redundancy.

Two new missile systems, the SS-X-20 intermediate range ballistic missile (IRBM) and the SS-X-16 ICBM, were developed with mobile deployment capabilities. Deployment of the mobile SS-X-20, currently assessed as an IRBM, and therefore not limited by SALT, could begin early this year.

The U.S. ICBM force of 1,054 at the end of FY 1977 will remain constant through the end of FY 1982. Of the 1,054 missiles, 550 will be MIRVed. The force will be composed of 54 Titan, 450 Minuteman II and 550 Minuteman III missiles. The Minuteman III force will have been modernized to provide improved accuracy, increased yield and improved targeting flexibility.

Soviet Missiles

The SS-7 and SS-8 are old ICBMs that were designed and largely deployed before the mid-1960s. The protocol to the interim agreement permits the

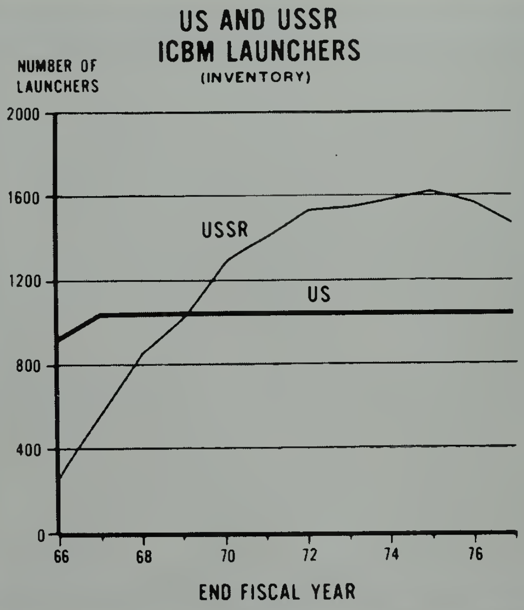


CHART 2

substitution of SLBMs for ICBMs deployed prior to 1964. In June 1974, in the Standing Consultative Commission (SCC) established by the Strategic Arms Limitation undertakings, the United States and Soviet Union agreed to notification requirements and deactivation procedures which are to be implemented as substitutions take place. In the March 1975 SCC Session, the Soviets notified the United States that dismantling or destruction of ICBM launchers had commenced.

The Soviets have modernized a substantial number of their SS-II silos. We believe that a mix of Mod 2 (single reentry vehicle) and Mod 3 (three reentry vehicles) SS-IIs has been deployed in these silos. Both the Mod 2 and Mod 3 are more accurate than the SS-II Mod I.

We are uncertain what the Soviets have in mind for the modernized silos over the long run. The force of SS-II Mod 2 and Mod 3 missiles probably will decline over the next five to 10 years. They might be replaced with a new follow-on missile; they could be dismantled as trade-offs for more SLBM launchers under the SALT II agreement; or they could be replaced with still another variant of the SS-II.

The SS-9 launch groups being converted to the SS-18 is continuing. The Soviets began converting the first SS-9 group in 1973.

The Soviets have developed three variations of the "cold-launched" SS-18, and may deploy all three. Since the Mod I, single RV, was the only one of which testing and crew training had been completed by the time the first SS-18 silos were completed, it is believed that this version is installed in these first launchers. The Mod 3 carries a somewhat lighter but more accurate single RV than the Mod 1 and could now be ready for deployment. The first crew training launch of the Mod 3 occurred in February 1976. The Mod 3 has a maximum operational range greater than that of the other two SS-18 variants.

The Soviets apparently plan to deploy a mix of the single-RV variants of the SS-18. The advantages of the Mod 3 over Mod I suggest that deployment of the Mod I will be limited. The Mod 3 may eventually replace the Mod I.

The Soviets are continuing to test alternative payload options for the Mod 2—the MIRVed variant of the SS-18. It is believed that a mix of payloads probably will be deployed on the Mod 2. We continue to believe that the Mod 2 will be the most widely deployed variant of the SS-18, largely because of its MIRV capability. Initial deployment may already have begun.

The pace of conversion of the SS-II to the SS-17 is not proceeding quite as rapidly as expected last year. Conversions probably will be limited at each complex to avoid having too many launchers off line simultaneously.

The MIRVed SS-17 variant has been installed in operational silos. In February 1976, the Soviets began testing the SS-17 with a single RV. As a result, if the single RV variant is deployed, the determination of the mix will be difficult.

The SS-19 silo conversion program is further along than those for the SS-17 and SS-18.

The SS-19s deployed to date have carried six MIRVs. The Soviets are now testing a single RV with the SS-19. If the single RV variant of the SS-19 is deployed, there will be difficulty in distinguishing it from the MIRVed variant.

Development of the initial version of the SS-X-16, a three-stage solid-propellant ICBM, was essentially complete by the end of 1975. This version, which carries a PBV and a single RV payload, has been tested.

The status of this program is unclear. In any case, last year's assessment that deployment of the SS-X-16 was imminent, has not occurred.

There has been no evidence over the past year that would argue for a revision of the judgment that the Soviets have developed a mobile version of the SS-X-16. They will probably continue mobile ICBM development efforts to maintain their technology in this area. A serious question centers on the impending Soviet deployment of the SS-X-20 mobile Intermediate Range Ballistic Missile (IRBM) and the relationship of that system to the SS-X-16. The SS-X-20 is comprised of the first two stages of the three stage SS-X-16. There is evidence that SS-X-20s will soon be deployed. At some point in the future, the Soviets could relatively quickly provide themselves with greater capabilities against the United States by upgrading SS-X-20 deployment to the SS-X-16. Such action by the Soviets could significantly increase the number of ICBMs in their intercontinental forces during a period of worsening U.S.-Soviet relations. Were the Soviets to upgrade SS-X-20s to SS-X-16s, their capabilities against regions peripheral to the Soviet Union would be degraded.

The Soviets have research and development (R&D) programs in progress to develop both modified and new ICBMs. Depending on the technological innovations involved, it can take up to eight years of preflight development to bring an entirely new missile to the flight test stage. During the early development period, we usually see little or no evidence of an identifiable new program. As a new system nears its flight test phase, information is more likely to become available. Consequently, we have more insight on systems that could be flight tested in the next few years. For the longer term period, we make projections of modifications and follow-on systems based on past

Soviet development patterns, or our assessment of Soviet requirements, and on technology trends which are likely to impact on future ballistic missile programs.

U.S. Missiles

The U.S. ICBM force has a combination of characteristics, including positive command and control, high reliability, accuracy and timely weapons delivery which provide a flexible range of response options. Efforts are underway to improve further these capabilities. The incorporation of a command data buffer permits retargeting of a Minuteman missile in 25 minutes and, when fully operational, will permit retargeting of the entire Minuteman III force in less than 10 hours. Further, it is proposed that this retargeting capability be incorporated in the Airborne Launch Control System. Improvements in Minuteman III accuracy continue to be pursued to assure greater effectiveness per missile. Additional efforts are focusing on a terminally guided maneuvering reentry vehicle. Our Minuteman silo upgrade program, which has added a significant degree of protection against blast, shock and other nuclear effects of the ICBM force, is nearing completion. These silo improvements, combined with reliable sensor indications of impending attacks, provide a high order of survivability and reliability well into the future.

Both the Titan II and Minuteman II missiles, though aging, continue to provide an important contribution to the TRIAD. Improvements are on-going for Titan to improve maintainability and to reduce operating costs. With these improvements, the Titan with its large warhead will remain a useful and reliable missile supportable in future years. In fact, all our ICBMs have sustained a very high overall alert reliability rate, which speaks extremely well for the day-to-day readiness of this force.

The MX ICBM program represents the most significant strategic initiative being proposed. This system, with improved guidance and increased numbers of highly accurate MIRVed warheads, together with a mobile, highly survivable basing mode, provides a hedge against Soviet strategic momentum and other uncertainties in the strategic environment. The MX will retain the prompt, high confidence, counterattack capabilities of the exisiting ICBM force. Additionally, it will ensure maintenance of strategic balance despite projected enhancement of Soviet hard target kill capability.

SLBM Forces

Before addressing the relative balance of SLBM forces, it should be noted that, as with ICBM forces, they are constrained by the interim agreement.

As noted earlier, the interim agreement limits SLBM launchers and modern ballistic missile submarines to the number operational and under construction on May 26, 1972, but allows for additional construction as replacement for older ICBMs or SLBMs. As of the date of signature of the agreement, the United States had 656 SLBM launchers operational and under construction and the Soviet Union had 740. The protocol to the interim agreement, however, permits the United States and the Soviet Union to increase the size of these forces—the United States to 710 SLBM launchers on 44 nuclear powered ballistic missile submarines (SSBNs); the Soviets to 950 SLBM launchers on 62 SSBNs. Any increase in SLBM launchers over those numbers operational and under construction on May 26, 1972 requires the dismantling and destruction of an equal number of ICBM launchers of older types deployed prior to 1964 or SLBM launchers on older submarines (Hotel). In an agreement based on the Vladivostok Understanding, the numbers contained in the protocol remain valid until Oct. 3, 1977, when it expires. Limits on numbers of SLBM launchers after that date will be those that result from the terms of a new agreement.

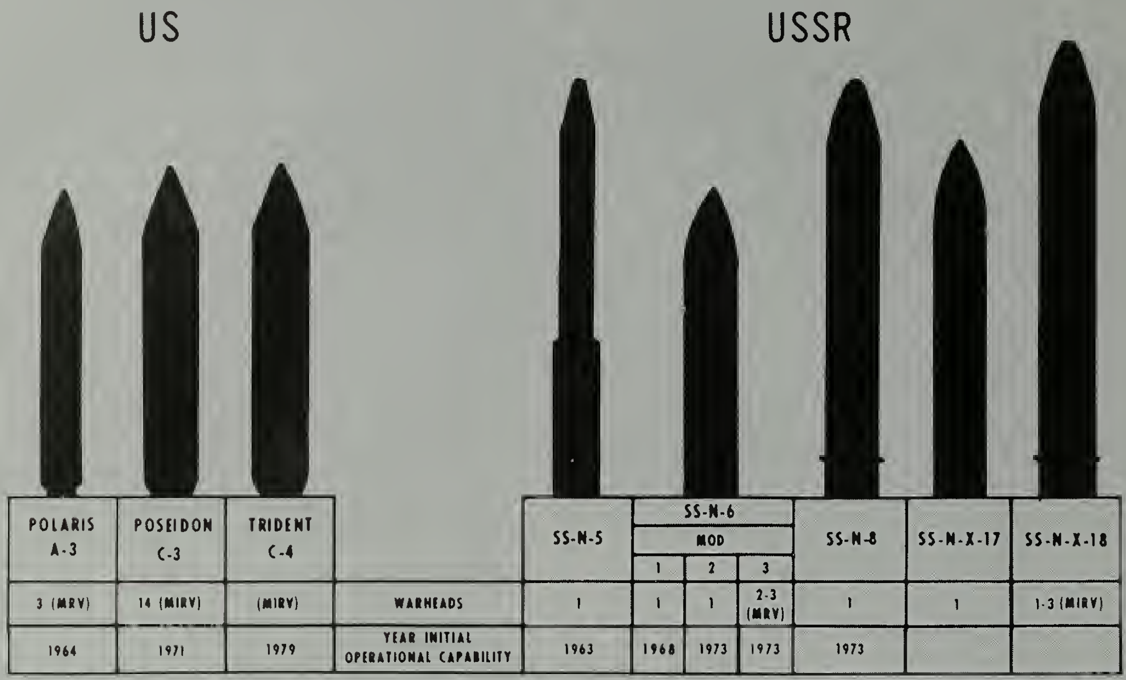
In August 1975, the Soviets began to move from the 1972 interim agreement "baseline" level of 740 SLBM launchers to the 950 level when, in late August, the SSBN carrying their 741st launcher began its sea trials. Under the agreement, the Soviet Union is required to begin dismantling an equal number of SS-7 or SS-8 launchers and/or SLBM launchers on older submarines, and to notify the United States of its actions. It seems certain that the Soviets intend to expand their SSBN/SLBM force up to the interim agreement limit of 950 modern SLBM launchers and 62 modern ballistic missile submarines.

The Soviet ballistic missile submarine force continues to grow in size, complexity, and capability. As of Nov. 1, 1976, the Soviets had almost 800 SLBM launchers on about 60 SSBNs in operational status. There are about 200 additional launchers on SSBNs fitting out, on sea trials, or under construction. There also are about 60 launchers on older diesel units which are not accountable under the SALT interim agreement.

The size and diversity of the Soviet SLBM force and the pace at which it continues to be developed reflect its high priority among Soviet military programs.

The SS-NX-17, the first Soviet SLBM using a solid propellant and a PBV for deployment of RVs, began flight testing in 1975. It may have a MIRV capability. Later in 1975, testing commenced on a second SLBM, the SS-NX-18, with a PBV. Using a more sophisticated guidance system, this missile probably can deliver three MIRVs.

COMPARISON OF US AND USSR SLBMS



	POLARIS A-3	POSEIDON C-3	TRIDENT C-4	SS-N-5	SS-N-6			SS-N-8	SS-N-X-17	SS-N-X-18
					MOD					
					1	2	3			
WARHEADS	3 (MRV)	14 (MIRV)	(MIRV)	1	1	1	2-3 (MRV)	1	1	1-3 (MIRV)
YEAR INITIAL OPERATIONAL CAPABILITY	1964	1971	1979	1963	1968	1973	1973	1973		

CHART 3

The number of SLBMs within firing range of the United States on a day-to-day basis is increasing as additional Delta class units become operational. With their 4,200 nautical mile range SS-N-8 missiles, these SLBM forces could strike the United States while still in port in Russia. The Soviets are aware of potential threats to their SLBM force and are attempting to increase its survivability.

We estimate that by the end of FY 1977, the Soviet Union will have a SALT-accountable inventory of almost 900 ballistic missile launchers in nuclear powered submarines. By contrast, the U.S. force will consist of 160 Polaris missiles in 10 submarines and 496 Poseidon missiles in 31 submarines. Our Poseidon missiles carry MIRVs while Polaris carries multiple RVs.

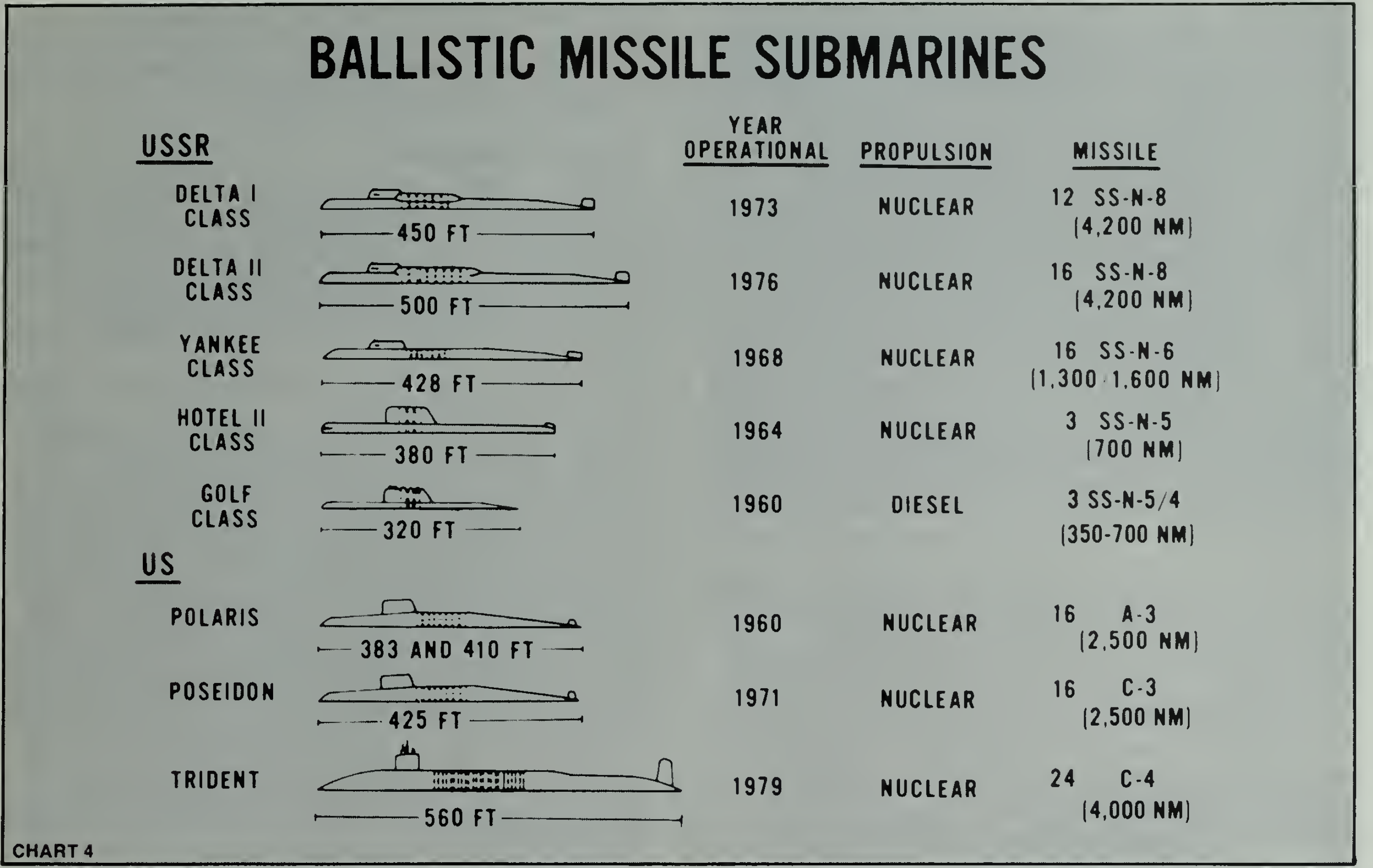
In addition to the various factors summarized in Charts 3, 4, and 5 the capability to maintain the material condition of the submarine force at an acceptable level by timely overhaul and shipyard maintenance is important when assessing the effectiveness and readiness of the SLBM force.

As reported last year, it is estimated that the Soviet Union requires an average of 24 months to overhaul a nuclear submarine. This compares with 17 months for U.S. shipyards, and we are not confident that their overhauls are comparable to ours in thoroughness or quality. Considering their entire submarine force, the Soviets should overhaul about 20 units per year. This is a high shipyard workload and may explain in part why only about 11 per cent of the Soviet first line nuclear fleet, as compared to more than 50 per cent for the United States, operates away from port at any given time.

SLBMs

The SS-N-5, which first entered the Soviet submarine force in 1963, is an intermediate-range ballistic missile. Although it has a relatively short range and large circle error probability (CEP), it remains an effective weapon against soft targets because of its warhead size. This missile is currently deployed in the Golf II class diesel powered ballistic missile submarine (SSB), and the Hotel II class SSBN.

The SS-N-6 became operational in 1968 and is currently the most widely deployed Soviet submarine-launched missile system. It is carried by Yankee class SSBNs. Three versions of the SS-N-6 missile are operational—the Mod 1, Mod 2, and Mod 3.



BALLISTIC MISSILE SUBMARINES

	Length	YEAR OPERATIONAL	PROPULSION	MISSILE
USSR				
DELTA I CLASS	450 FT	1973	NUCLEAR	12 SS-N-8 (4,200 NM)
DELTA II CLASS	500 FT	1976	NUCLEAR	16 SS-N-8 (4,200 NM)
YANKEE CLASS	428 FT	1968	NUCLEAR	16 SS-N-6 (1,300-1,600 NM)
HOTEL II CLASS	380 FT	1964	NUCLEAR	3 SS-N-5 (700 NM)
GOLF CLASS	320 FT	1960	DIESEL	3 SS-N-5/4 (350-700 NM)
US				
POLARIS	383 AND 410 FT	1960	NUCLEAR	16 A-3 (2,500 NM)
POSEIDON	425 FT	1971	NUCLEAR	16 C-3 (2,500 NM)
TRIDENT	560 FT	1979	NUCLEAR	24 C-4 (4,000 NM)

CHART 4

The maximum operational range varies from 1,300 to 1,600 nautical miles dependent on the modification. While the Mod 1 and Mod 2 have single reentry vehicles, the Mod 3 is distinguished by at least two and possibly three RVs though not independently targetable. The combination of yield and accuracy for all three versions of the SS-N-6 limits its effectiveness to soft targets.

The SS-N-8 is a long-range ballistic missile carried by the 12-tube Delta I and 16-tube Delta II class SSBNs. This missile is capable of delivering a relatively large warhead to a maximum range of 4,200 nautical miles and is thus still the longest range SLBM currently operational in the world.

The SS-N-13 is a tactical ballistic antiship missile. It may have been intended for deployment in Yankee class SSBNs. It has not been tested since November 1973 and is not operational. However, the advanced technology displayed by the weapon is significant and the project could be resurrected.

The SS-NX-17 may soon be ready for the at-sea phase of testing. It is expected that a Yankee conversion will be the platform for this missile. The SS-NX-17 is the Soviet Union's first solid propellant SLBM and is the first to use a PBV for deployment of RVs, which suggests a MIRV capability.

The SS-NX-18 is in some respects similar to the SS-N-8 but it is believed to be larger, to have a MIRV capability, and to have a more sophisticated guidance system. It is estimated that the SS-NX-18 can deliver three MIRVs.

It is expected that the Soviets will continue to develop and improve their SLBM force. The backbone of this force will continue to be the Yankee and Delta I and II class submarines. Both a follow-on SS-N-6 system and a follow-on SS-N-8 system are projected after 1981. These systems are expected to have greater throw-weight capability and improved accuracy. These follow-on systems are expected to be comparable in size to the current SS-N-6 and SS-N-8 systems. Thus, they could be backfitted into the Yankee and Delta submarines with a minimum of shipyard time, effort, and cost.

Since the initial deployment of the Polaris A-1 SLBM in 1960, evolutionary and technological improvements in both the submarines and missiles have improved

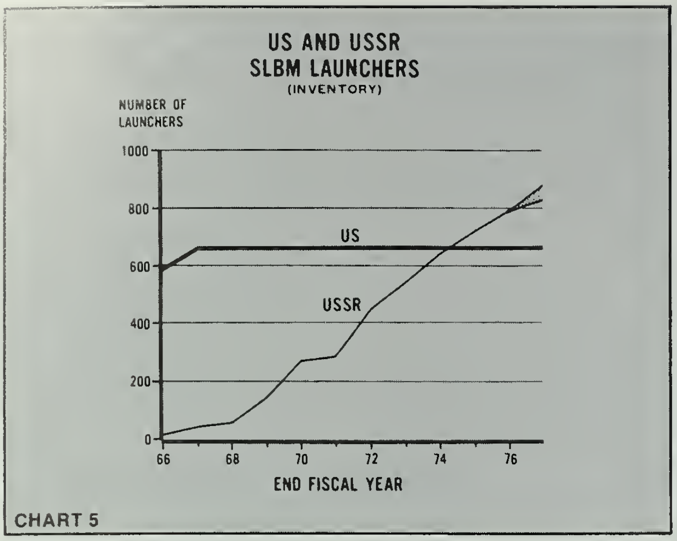


CHART 5

operational capability and flexibility. Today, our Pacific SSBNs are deployed with the Polaris A-3 missile capable of ranges up to 2,500 nautical miles. In the Atlantic, all SSBNs are equipped with the Poseidon MIRV system.

Looking ahead, the Trident system will replace the Polaris systems as they reach the end of their useful life. The Trident missile, with a range capability in excess of 4,000 nautical miles, will permit SSBN basing in the United States without sacrificing alert rates. At the same time it will increase the SSBN operating area by a factor of about 10, thus significantly complicating the Soviet antisubmarine warfare (ASW) problem and maintaining the excellent survivability of our sea-based strategic deterrent.

The Trident I missile has been sized to be compatible with Poseidon SSBNs and will have an accuracy at 4,000 nautical miles comparable to the current Poseidon missile accuracy at half that range. Backfit of this missile into Poseidon submarines will commence in 1980, with deployment of a 10-ship force planned by the end of 1982. Deployment of the Trident I missile into both the Atlantic and Pacific confronts any potential enemy with a two-ocean ASW problem while increasing our targeting flexibility and effectiveness.

We are asking to continue the SLBM Improved Accuracy Program. This effort will provide a technology base as a foundation for decisions on accuracy improvements for the Trident II missile planned for an IOC in the mid to late 1980s. The Trident II conceptual development, planned for initiation in FY 1978, will proceed in parallel with the Improved Accuracy Program.

We also plan the continuation of advanced development of the Mark 500 Evader maneuvering reentry vehicle. The Evader will provide improved SLBM penetration of potential ballistic missile defenses and will serve both as a deterrent and a hedge against Soviet improvements in actions to enhance their antiballistic missile defenses.

Soviet Submarines

Golf class diesel-powered submarines were the first Soviet submarines designed to carry ballistic missiles. The first of the 23 units built reached operational status in 1958. Most of those units that are still operational as ballistic missile submarines almost certainly have been assigned missions against targets on the Soviet periphery.

The first of eight Hotel class SSBNs was launched in 1959 and carried SS-N-4s.

The Yankee class SSBN weapon system, when introduced into the Soviet fleet in late 1967, represented a significant advance in Soviet sea-based strategic capability. Between 1966 and 1974, 34 Yankee class SSBNs were produced. This class still constitutes the largest component of the Soviet strategic SSBN fleet. The Yankee SSBNs are armed with 16 SLBMs of the SS-N-6 family, designated Mod 1, Mod 2, and Mod 3. It is expected that a Yankee class SSBN will be modified to carry the SS-NX-17 missile. Although the new Delta class continue to be introduced into the Soviet submarine force, it is expected that the Yankee class will continue to constitute the majority of the Soviet SSBN force for the foreseeable future.

Recent additions to the Soviet SSBN force are the 12-tube Delta I and 16-tube Delta II class submarines. Each type is armed with the 4,200 nautical mile SS-N-8 missile. The long range and accuracy potential of this missile system, combined with the operating capabilities of Delta I and Delta II SSBNs, make this weapon system the greatest SLBM threat to the United States. These platforms are within missile range of most U.S. targets from their home ports. This increases the day-to-day strategic threat to the United States.

U.S. Submarines

The U.S. SSBN force currently consists of five classes of submarines. The older two classes consist of a total of 10 Polaris submarines with the Polaris A-3 missile. These 10 submarines deploy from Guam and comprise our Pacific sea-based strategic force. The other three classes (31 submarines) are being modified to carry the Poseidon missile. Twenty-eight of these conversions have been completed with the last scheduled for completion prior to the end of this year.

U.S. Poseidon submarines deploy from Charleston,

STATIC COMPARISON OF US AND USSR BOMBERS

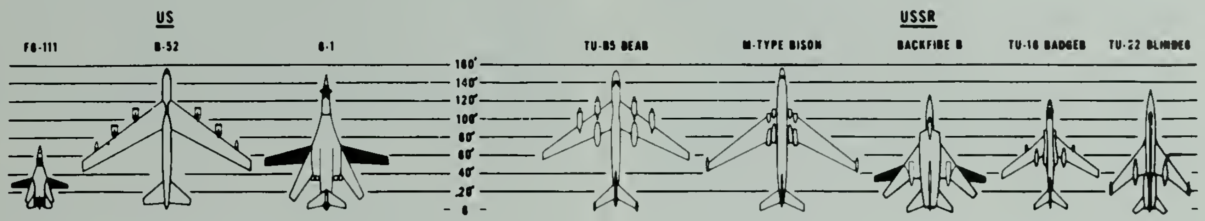


CHART 6

South Carolina, Holy Loch, Scotland, and Rota, Spain. Relocation of the Rota-based squadron to the United States is planned during 1979. The planned conversion of these 10 Poseidon missile submarines to the longer range Trident I system will permit U.S. basing with no degradation of overall force alert rate.

The Trident submarines, each capable of carrying 24 MIRV missiles, will achieve IOC in 1979. The survivability and high system effectiveness of Trident will ensure that the United States continues to maintain a strong sea-based deterrent in the mid-1980s and beyond. The Trident is quieter than Poseidon, and is capable of sustaining a higher at-sea rate. With these characteristics, and armed with longer range missiles which allow greater submarine operating areas, the Trident will maintain the credibility of our SSBN force. Furthermore, the Trident launch tubes have been designed with growth potential to accommodate the larger Trident II, as a follow-on to the Trident I missile. This will further increase the ability of our sea-based strategic forces to help maintain a stable strategic balance.

Bomber Forces

It was agreed at Vladivostok that "heavy bombers" would be included in the 2,400 aggregate limitation of strategic nuclear delivery vehicles. The question of which heavy bombers to include and how many should be included under the 2,400 limit remains unresolved. Our position is that the Soviet Backfire must be counted in the aggregate since it has capabilities similar or superior to those aircraft which both sides agree are heavy bombers. The Soviets, however, have rejected our position on Backfire maintaining it is a medium bomber intended for peripheral missions.

For the past 10 years the Soviet Strategic Long-Range Aviation (LRA) bombers have included the four-engine turboprop Bear and the four-engine jet Bison. The current strike force has about 100 Bear and 40 Bison, about evenly divided between gravity bombers and air-to-surface missile carriers.

The Soviets also have about 44 Bison that have been converted from bombers to tankers and a number of Bear configured as reconnaissance and ASW aircraft. I mention these figures because the Soviets could convert these bomber variant aircraft into bombers with little difficulty, if they chose to do so. The Bison tankers refuel both the Bear and Bison. They are also capable of refueling the Backfire. The Soviets could modernize or expand this force by developing a new tanker based on a transport design such as the IL-76/Candid jet transport or convert the remaining Bison bombers to tankers.

The Backfire is the only Soviet bomber currently being produced and deployed to their LRA and Soviet Naval Aviation (SNA) forces. Our technical assessments of the Backfire's performance continue to show that this aircraft has the capability for intercontinental missions against the United States.

The Soviets may be in the process of developing a new long-range bomber to replace their Bear and Bison. Since 1974, Soviet officials have on several occasions referred to such developments. We expect that operational deployment would not occur until about five years after the first prototype is rolled-out. Therefore, even if such a program is underway, this new bomber could not appear in the operational force until the early 1980s.

Soviet Bombers

Regarding Backfire's capabilities, Defense Intelligence Agency's technical assessments still show the same capabilities discussed last year. On one-way Arctic-staged missions recovering in friendly or neutral territory, the Backfire is capable of delivering weapons anywhere in the United States without aerial refueling. Staging from Arctic bases and refueled, the Backfire could cover virtually all of the United States on two-way high altitude subsonic missions. The unrefueled radius would cover the western United States in an arc generally extending from Los Angeles to the western tip of Lake Superior. Carrying air-to-surface missiles (ASMs), the Backfire would have somewhat reduced capabilities, but the potential range of the ASM would produce comparable target coverage. Tanker support would be required for intercontinental missions involving supersonic dash or extended low-altitude operations. All Backfire are believed to have a refueling probe and to be capable of aerial refueling.

With or without a tanker, the Backfire is a versatile, multi-purpose aircraft capable of performing nuclear strike, conventional attack, antiship, reconnaissance, and electronic warfare missions. Although Backfire clearly has extensive capabilities for various types of peripheral land and sea missions, its intercontinental capabilities cannot be prudently ignored. It appears that the Soviet Union remains dedicated to maintaining an intercontinental bomber force.

U.S. Bombers

The U.S. manned bomber, with its unique and proven capabilities, will play an important role in deterrence well beyond the useful life of the current force. The average age of our B-52 force is more than 18 years. The B-1 has been selected as the most cost effective alternative to modernize the bomber force, and to upgrade effectiveness and survivability. Reduced radar cross section, variable geometry (swing) wing, improved avionics and greater payloads over longer distances enable the B-1 bomber to perform its mission in hostile environments with a high degree of safety and probability of success. Armed with an improved Short Range Attack Missile (SRAM) (a U.S. air-to-surface missile), as well as gravity weapons and equipped with the latest special electronic countermeasures equipment to assist in penetration of the most sophisticated defenses, this aircraft will be capable of worldwide response to numerous national requirements well into the 21st century.

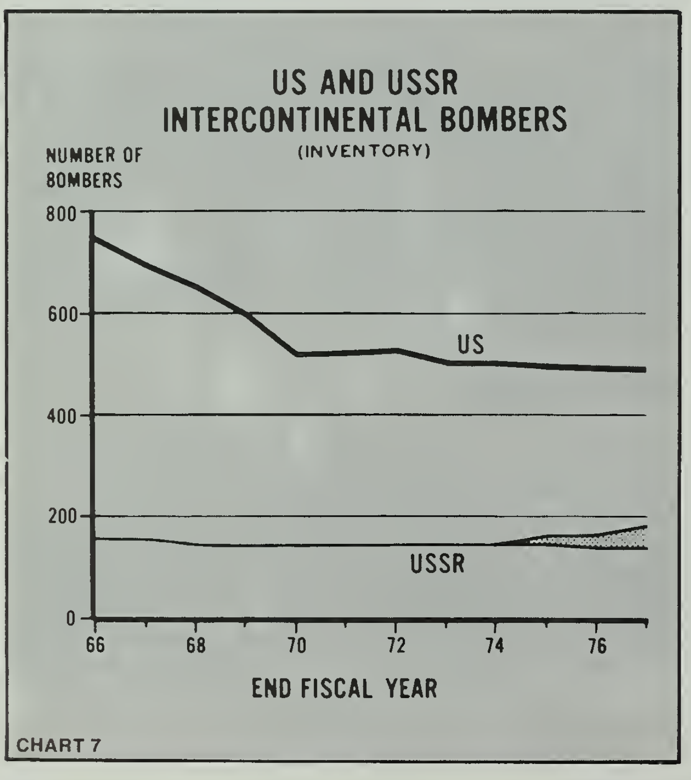


CHART 7

The B-1 bomber has successfully demonstrated mission accomplishment, including flying qualities and engine testing. The program represents a sound managerial/technical approach to aircraft procurement. This aircraft will have capabilities superior to any intercontinental bomber in existence or forecast to be deployed by the Soviet Union in the foreseeable future. These B-1 capabilities are an indispensable element of our deterrent force.

In the interim, prior to B-1 deployment in significant numbers, the B-52 and FB-111 force will continue to constitute the U.S. intercontinental bomber force. Currently we are maintaining approximately 30 per cent of our bomber force on strategic alert. In addition to the various nuclear attack options that have been pre-planned and integrated with other U.S. nuclear forces, our force of strategic bombers has application throughout a wide range of conventional and collateral missions. The collateral roles, for which the bomber force has considerable capability, include the delivery of aerial mines, the performance of long-range sea surveillance, and surface interdiction in support of U.S. maritime area commanders. The flexibility of the strategic bomber forces is being enhanced through the development of precision guided conventional munitions, such as the GBU-15 guided glide bombers.

Coincident with the operational deployment of B-1 aircraft, various B-52 programs must continue. These include upgrading and extending the useful life of the various models, modernization of both offensive and defensive avionics, and development of a broader range of aerial delivered nuclear and conventional weapons.

Soviet Air-to-Surface Missiles

The AS-3/Kangaroo air-to-surface missile carried by some Bear variants can deliver a nuclear warhead at a maximum range of 350 nautical miles. The AS-4/Kitchen air-to-surface missiles have been identified with Backfire. This missile can also carry a nuclear warhead. Future improvements in Soviet air-to-surface missiles are a virtual certainty. In

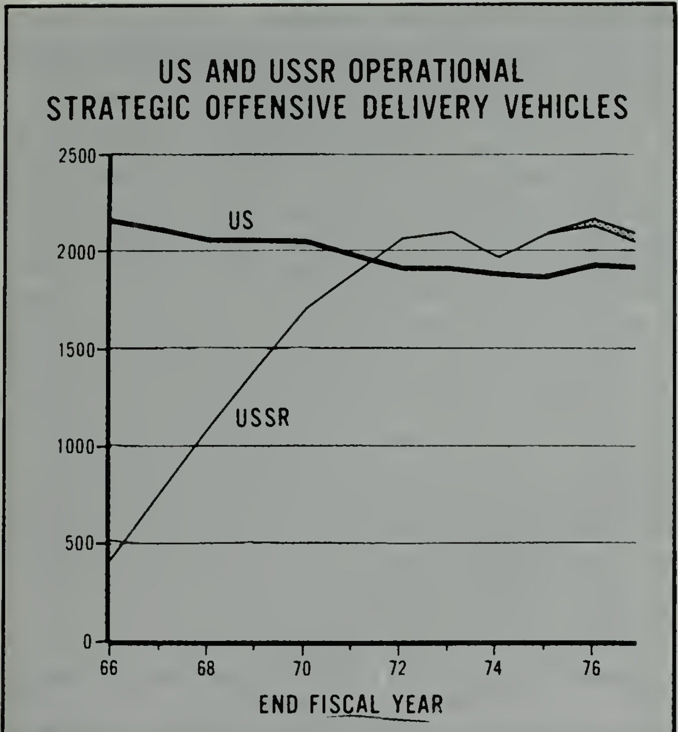


CHART 8

addition to these air-to-surface missiles, the Soviet Union could employ a stockpile of nuclear bombs in a strategic attack on the United States.

U.S. Air-to-Surface Missiles

The SRAM, a supersonic air-to-surface weapon, is presently deployed with the strategic bomber force. The SRAM can penetrate Soviet defenses to destroy high value targets. This system has the flexibility to suppress sophisticated terminal defenses. The SRAM B, a nuclear hardened and updated SRAM, is planned for deployment and will be compatible with the B-1 bomber.

The Air Force air launched cruise missile (ALCM) is currently in advanced development with an option for a 1980 IOC. Concepts postulated for employing ALCMs on the B-52 force envision multiple applications of the weapon. Some B-52s will possess the capability to penetrate Soviet defenses carrying a mix of SRAM and ALCM on the internal rotary rack, with gravity bombs in the forward bomb bay. Other sorties carrying only ALCMs internally and/or externally could take advantage of the long range of the ALCM by launching it against targets located deep within the Soviet target system. Launch points would be selected to maximize the ALCM's contributions to the bomber force.

In addition to factors already discussed, four other indicators of nuclear strength—delivery vehicles, megatonnage, warheads, and throw-weight/payload—contribute to an analysis of relative strategic capabilities. Charts 8, 9, and 10 show better than words the growing strategic nuclear operational capabilities of the Soviet Union. These charts do not include ICBM launchers under construction or conversion, or submarines in conversion, overhaul or awaiting missiles. Only unit equipment bombers are counted.

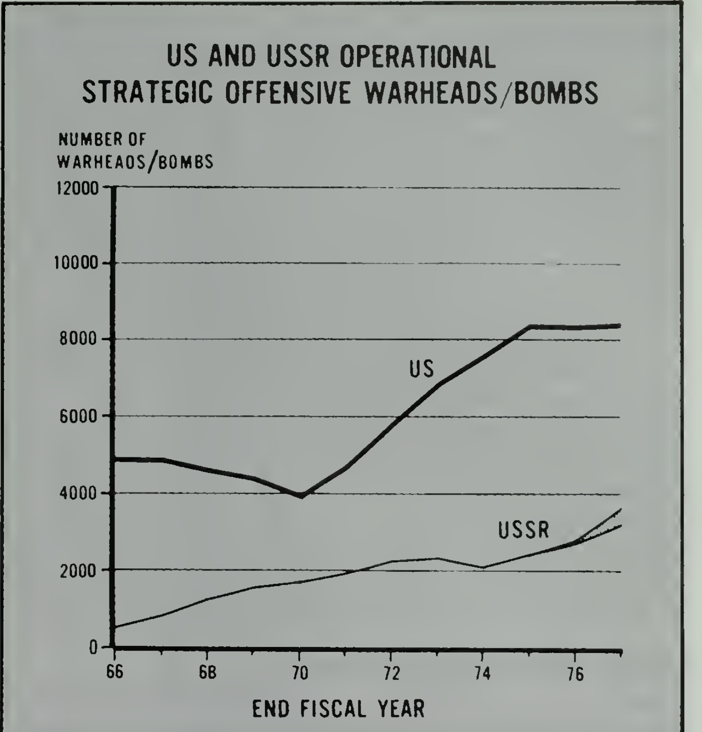


CHART 9

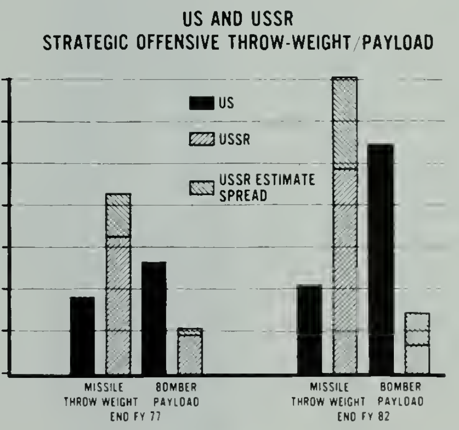


CHART 10

Chart 8, Operational Strategic Offensive Delivery Vehicles, points out the emphasis the Soviet Union has placed on strategic offensive programs and their effectiveness in countering a United States advantage.

The current decline in operational megatonnage of U.S. systems results from our ICBM and SLBM MIRVing programs. When a missile of a given throw-weight is MIRVed, the yield is reduced because the weight of the MIRV dispensing mechanism replaces part of the weight and resultant megatonnage of the single warhead.

Chart 9 depicts the number of strategic warheads and bombs which are fitted into the delivery vehicles. Here we see the U.S. lead in this very significant measure being gradually diminished.

Chart 10 reflects Strategic Offensive Throw-weight and Payload. Throw-weight is normally associated with missiles and reflects the weight of that part of the missile above the last boost stage. Payload is associated with bombers and indicates representative bomber loading. The continued growth of Soviet throw-weight is an important concern. The United States is expected to offset partially this Soviet advantage by retaining a lead in bomber payload and by deployment of our new heavier MX ICBM in 1983.

U.S./Soviet Strategic Defense

The strategic equation is ordinarily thought of in terms of "offensive" and "defensive" systems. Either type force can both threaten or contribute to strategic stability. Further, the balance between these systems is not linear. A modest increase in offensive capability might require massive investment in defenses. The opposite could also be true. Passive defense measures such as dispersal and population sheltering combine with active defense measures to add yet another factor to the equation. If an attacking nation can adequately assure survival of a substantial part of its population and a sufficient industrial base to support the surviving population, the deterrent value of retaliating offensive systems is effectively reduced. In simplest terms, when the aggressor has effectively mitigated the impact of retaliation to the point where the damage of retaliation is acceptable, then deterrence has been substantially reduced. Extreme asymmetry in strategic defensive capabilities creates an unstable situation.

The imbalance between U.S. and Soviet antiballistic missile (ABM) forces is not destabilizing at this time, but risks could arise from unanticipated breakthroughs in technology. Imbalances between interceptor and surface-to-air missile forces taken together with an expanding Soviet capability for offensive intercontinental bomber operations dictate that we proceed with our interceptor force modernization program.

Antiballistic Missile Forces

Before discussing the relationship between U.S. and Soviet ABM forces, it is again necessary to detail the constraints imposed by existing agreements.

The ABM Treaty of 1972 originally limited the sides to two ABM sites so restricted and so located as to prevent then from functioning as a nationwide ABM defense system. One site could be centered on the national capital and the other on an ICBM launch area. Each site could contain no more than 100 launchers and missiles. There were specific restrictions on the number and types of radars which could be employed at the sites. The treaty also prohibited the parties from developing, testing, or deploying ABM systems or components which were sea-based, air-based, space-based or mobile land-based. In addition, the parties agreed not to develop, test, or deploy ABM launchers capable of launching more than one missile at a time; ABM systems that would provide a rapid reload capability; and interceptor missiles with more than one independently guided warhead.

On July 3, 1974, protocol to the ABM treaty was signed in Moscow. The protocol, which was ratified on Nov. 10, 1975, further limits the parties to only one ABM deployment site. Each party, however, may relocate their ABM site on a one-time basis provided that advance notice of the change is given during a year when the ABM treaty is scheduled for review. The ABM treaty is reviewed every five years, with the first review scheduled for the year beginning Oct. 3, 1977. In 1972, the U.S. informed the Soviet Union that should an agreement on strategic offensive arms not be achieved within five years, it could constitute a basis for withdrawal from the ABM treaty.

Soviet ABM Forces

Operationally deployed elements of the Soviet ABM defenses include remotely located Hen House early warning radars, Dog House and Chekhov battle management radars near Moscow, Triad engagement radars and the ABM-1B/GALOSH interceptor missiles at four complexes also near Moscow. Each of the four launch complexes contain 14 launchers. There is no evidence that the Soviets intend to increase the 64 launchers to the 100 permitted under the agreement.

The present Soviet ABM system could provide adequate protection of the Moscow area against small unsophisticated missile attacks which did not employ penetration aids.

Although ABM launcher levels have remained static for the past few years, the Soviets have, during this same period, continued to upgrade their ballistic missile early warning (BMEW) capabilities.

The Soviet Union continues R&D efforts on components for a new ABM system. There is no present indication that the Soviets have adapted their extensive surface-to-air (SAM) network to ABM defense, nor that it is currently suitable for that role.

U.S. Ballistic Missile Defense

In compliance with Congressional direction, we have terminated and inactivated this Nation's only ballistic missile defense (BMD) system, Safeguard. This makes our BMD R&D effort all the more important. We cannot permit the degradation of our technical capability to reactivate our ballistic missile defense system. Neither can we concede technological superiority in this area to the Soviet Union. Consequently, it is vital that we continue with an aggressive and visible BMD research and development program.

The present U.S. BMD research and development program consists of two separate but interrelated activities: Advanced Technology and Systems Technology.

The Advanced Technology Program is a broad effort to advance the state-of-the-art of BMD components, improve our understanding of BMD phenomenology, and investigate the feasibility of potentially revolutionary concepts and technologies. Signficant research is conducted in the areas of radar and optical sensors, interceptor missiles, data processors, and those aspects of the physical sciences involving BMD technology. A principal objective of the program is to maintain a technological lead over the Soviet Union. In addition, the program provides the technological basis for judging Soviet developments in BMD and assisting in the evaluation of our own strategic offensive forces.

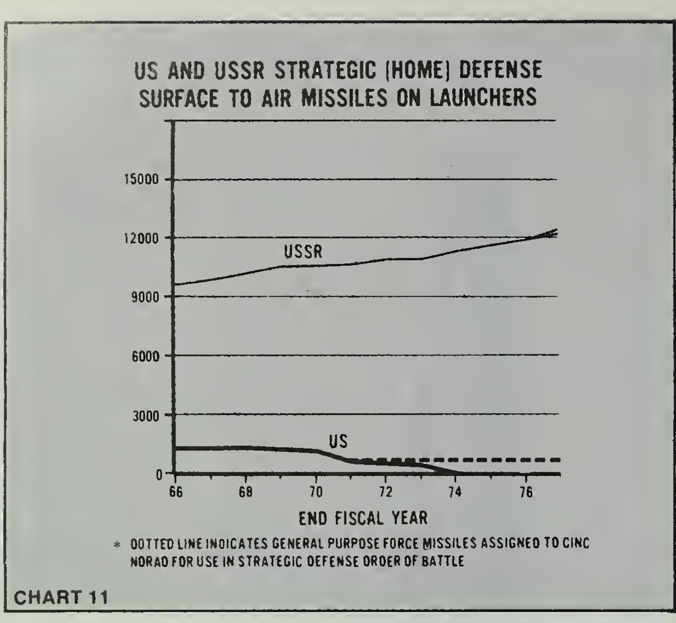
The Systems Technology Program provides the other critical element of the BMD program by attacking the most critical aspect of BMD technology, the integration of components and the testing of systems concepts. Accordingly, the program includes the development of a versatile test bed that can be used to test a wide range of potential systems concepts. We are seeking what you might call a "rolling hedge" which is the ability to design, test, and update systems concepts and infuse new and innovative technology where appropriate—always to have the ability to develop and deploy a state-of-the-art system.

In summary, the U.S. BMD Program is examining new technologies for application to BMD and is also addressing critical BMD problems in a systems context. Both of these aspects are essential to our overall goal of avoiding technological surprise by the Soviet Union while preserving the capability to deploy the right BMD system at the right time if required.

Soviet Air Defense

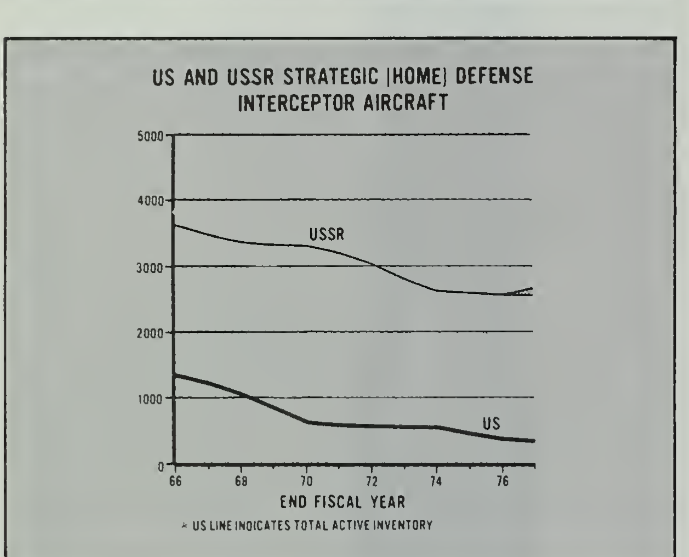
The Soviet Union's strategic air defense is by far the most extensive in the world. It operates more than 6,000 radars located at early warning and ground

The Soviets maintain the ABM Galosh interceptor missiles at four complexes near Moscow. This is a model of one of those missiles.


US AND USSR STRATEGIC (HOME) DEFENSE SURFACE TO AIR MISSILES ON LAUNCHERS

* DOTTED LINE INDICATES GENERAL PURPOSE FORCE MISSILES ASSIGNED TO CINC NORAD FOR USE IN STRATEGIC DEFENSE ORDER OF BATTLE

CHART 11


US AND USSR STRATEGIC (HOME) DEFENSE INTERCEPTOR AIRCRAFT

* US LINE INDICATES TOTAL ACTIVE INVENTORY

CHART 12

control intercept (EW/GCI) radar sites, about 2,600 fighter interceptors, and more than 12,000 strategic SAMs.

Many of the currently deployed Soviet air defense systems were originally designed and deployed to counter the medium-to-high altitude bomber and stand-off missile threats represented by the evolving technology of the late 1950s and early 1960s. Some new systems have been developed and older systems have been substantially modified and improved. Their effectiveness against the low altitude tactics and the SRAM which the U.S. Strategic Air Command employs today is less than what their sheer numbers would suggest. The Soviet force displays significant capabilities and continues to be improved.

U.S. Air Defense

The U.S. air defense system is considerably smaller than that of the Soviets because they have relegated a smaller portion of their nuclear striking power to bombers, preferring to rely heavily on ICBMs and SLBMs to deliver the bulk of their megatonnage. Consequently, we have not felt compelled to deploy as elaborate an air defense system. The U.S. maintains air defense capabilities to defend important areas worldwide, including areas of the continental United States and air and sea lines of communication. In addition, we maintain the capability to perform peacetime surveillance and control of U.S. air space with dedicated strategic forces and augmenting general purpose forces. While we no longer plan our posture against a massive bomber attack, it is nevertheless necessary to have the capability to preclude an aggressor from having unchallenged access to the air space over the United States for its bombers and airborne reconnaissance aircraft. Because there is an insufficient number of dedicated strategic interceptors to fulfill the peacetime air sovereignty mission, general purpose forces are assigned to North American Air Defense Command's operational control to support four of the 26 sites required by the peacetime alert posture. Augmentation forces would be made available at a time of increased readiness or declaration of hostilities. They would include forces from the Air Force Tactical Air Command, and from Army, Navy, and Marine forces which have primary missions other than strategic air defense. However, their contribution may be less effective than that of dedicated forces. Air National Guard interceptor squadrons also provide peacetime alert and would be fully mobilized in time of crisis.

Soviet Surveillance and Command and Control

Moss type aircraft provide the Soviets with a limited airborne controlled intercept (ACI) capability. The Moss has worked in overwater exercises, but is unequal to the more challenging overland task. If the Soviet Union intends to improve its air defense, a new airborne warning and control aircraft system, a better radar network for ground controlled intercept (GCI), and better airborne radars will be required.

U.S. Surveillance and Command and Control

The U.S. early warning and surveillance radar system was deployed during the late 1950s and early 1960s. This system has been steadily reduced since the mid-60s. Regional control centers and a network of Air Force and Federal Aviation Administration radars currently provide U.S. peacetime surveillance. Twenty-six alert locations provide interceptors for peacetime air space sovereignty and control around the periphery of the continental United States. Because the peacetime air sovereignty mission requires a deployment less than optimum for combat, plans exist which would quickly redeploy interceptors to locations from which they could meet the threat more effectively. The present aging system suffers from high operating costs, wartime vulnerability, and severe coverage deficiencies. Modernization of our strategic air defense force in the light of resurging Soviet bomber threat is an increasingly urgent requirement.

Some modernization of the surveillance and control system is already underway. Central to this effort is a network which will provide peacetime surveillance and air space control at lower costs. For warfighting, surveillance, command and control, we are bringing into service the E-3A known as AWACS (Airborne Warning and Control System). Its capabilities will negate the vulnerabilities of the ground control centers and greatly improve target acquisition and interceptor control. Enhancement of the Dewline with low cost, gap-filling radars will re-establish continuous all-altitude coverage. Finally, the introduction of a follow-on interceptor (FOI) will enable us to realize the potential this new modernized surveillance and command and control system will afford.

Soviet Interceptors

The Soviet air defense interceptor force consists of about 2,600 aircraft. The overall force level has been decreasing at a slow, but steady rate, since 1964. The aircraft that have been retired were primarily the older, clear-weather-only fighters, which have been replaced by more advanced all weather missile-armed aircraft. We expect the Soviet force level to stabilize and increase somewhat as more modern aircraft are deployed and new regiments are formed. Today, the Soviet air defense interceptor force is an all weather force that can intercept targets at medium or high altitudes. A small, but significant, portion of the force is capable of operating at combat altitudes in excess of 75,000 feet.

The present Soviet force consists of both pre-1964 aircraft (MIG-17/Fresco D, MIG-19/Farmer B/E, and SU-9/Fishpot B) and newer generation fighters (YAK-28P/Firebar, SU-11/Fishpot C, TU-128/Fiddler, SU-15/Flagon A/D/E, MIG-25/Foxbat A, and MIG-23/Flogger). The fighters presently being deployed to air defense units are the MIG-23/Flogger, SU-15/Flagon and MIG-25/Foxbat A.

The Soviets are continuing their efforts to improve low-altitude intercept capabilities. Look-down, shoot-down describes an interceptor system which can detect, track, and shoot-down a low-altitude penetrator from a higher altitude under conditions in which ground clutter would preclude success with a conventional airborne intercept radar and missile guidance system. Although they have yet to deploy a true look-down system, these activities highlight the continuing interest and efforts on the part of the Soviets toward attaining such a capability.

U.S. Interceptors

The F-106 Delta Dart is the mainstay of U.S. dedicated air defense interceptors. This aircraft, originally deployed in the early 1960s, has been continuously updated to sustain its capabilities.

STATIC COMPARISON
OF
US AND NEWEST USSR INTERCEPTORS

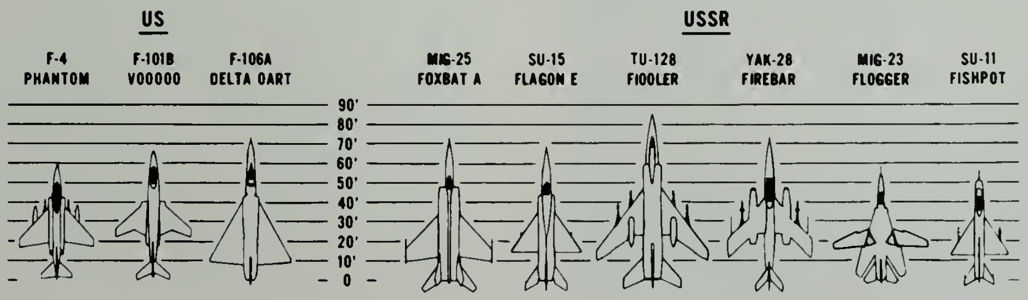


CHART 13

F-4 Phantom aircraft, such as this one, are slated to take over the interceptor force duties of one F-101 Voodoo squadron of the Air National Guard in 1977.

Presently, approximately half of the force is allocated to Air National Guard (ANG) squadrons and the other half to regular active squadrons.

While the F-106 has served well, it is approaching the limit of further development and service life. Eventually we must replace it with a new interceptor, which is programmed to begin deployment in the early 1980s. The Follow-on Interceptor will replace F-106 aircraft in the Regular Air Force and ANG fighter interceptor squadrons. The new interceptor will modernize our capability to defend against the Backfire bomber.

The F-101 Voodoo is the same vintage as the F-106. All of these aircraft are in four ANG squadrons. One F-101 squadron will be converted to the F-4 in this year and retained in the air defense mission. Because it has been necessary to increase tactical airpower in Europe, F-4 conversion aircraft are unavailable to replace the F-101s in the remaining three ANG squadrons at this time. The service of these aging interceptors will continue to be required until conversion aircraft can be made available.

The F-4 Phantom II is the primary general purpose fighter used to augment the interceptor force. Additional fighters from Air Force, Navy and Marine Corps general purpose forces may be added to the dedicated interceptors in times of crisis.

Soviet Strategic SAM Forces

Soviet strategic SAM forces have steadily expanded and been improved. While active SA-2 sites have declined in number, this has been largely offset by the continued deployment of additional SA-3 low altitude and SA-5 high-altitude sites.

The Soviet Strategic Defense Missile Force is composed of the SA-1 (Guild), the SA-2 (Guideline), the SA-3 (GOA), the SA-5 (Gammon), and the ABM-1 (Galosh). The ABM-1 is believed to have a nuclear warhead.

U.S. Strategic SAM Forces

The last of the U.S. strategic SAM forces was inactivated in 1974. Nevertheless, four general purpose force battalions, three in southern Florida and one in Alaska, were retained in a strategic role to provide increased depth in the air defenses of these two particular areas.

The proximity of Alaska to the Soviet Union is such that bombers, not ICBMs, are considered the pre-eminent threat. Consequently, we maintain a force of Nike Hercules missiles to complement the F-4 interceptors.

In Florida, the problem is similar. Cuba is only 90 miles from the Florida coast. While Cuba has no offensive bombers presently, they do maintain bases from which bombers could operate.

Soviet and U.S. Civil Defense

Civil defense is of growing concern. Fundamental to this concern is an understanding of the actual and perceptual role of civil defense on strategic stability and deterrence.

The Soviet Union includes civil defense as an integral part of its strategic defense and damage limiting programs. Their rationale asserts that credible civil defense contributes to deterrence, to strategic stability, and to the ability of the state to survive. Acting on this premise, the Soviet Union has established and is continuing to build a capable civil defense posture. Hardened shelters and command posts are available for military and civilian leaders at capitals and military headquarters below the national level. The shelter program for urban areas appears to be designed for the protection of people deemed essential rather than for the general populace. Preparations for industrial protection are extensive and spread over a wide range of locations and industries. Reserves of food supplies and fuel are located outside some urban areas. While these various activities are occurring, their extent and effectiveness are unknown to our intelligence community at this time.

On the other hand, U.S. policy has tended to rely on mutual vulnerability as the key to deterrence. As a result, U.S. civil defense has not been accorded the priority needed to maintain an effective capability.

Space Activities

The Soviet Union has continued to pursue extensive research and development and a renewed testing effort in space warfare as an integral element of their military doctrine. In terms of space weapon capability, they are ahead and are likely to continue in the lead for the next several years.

During the past year the Soviets have conducted four more antisatellite tests. The improving satellite intercept capability demonstrated during the recent Soviet tests complicates the U.S. task of space identification, attack assessment and warning of hostile space events.

Soviet satellites provide communications support to military, diplomatic, intelligence, and civilian organizations. In addition to the normal voice and television relay functions provided by communications satellites, Soviet satellites pass encrypted speech text. The satellites are supported by an extensive ground support network.

The Soviet Union continues to use six types of communications satellites: three in 12-hour highly elliptical orbits; one in a 24-hour synchronous orbit; and single payload and multiple payload systems, which are at relatively low altitudes. These systems continue to be used primarily for military/strategic support.

During 1977, the U.S. military will launch four satellites as part of a worldwide network. The purpose is to provide the Department of Defense with communications which cannot adequately or reasonably be provided by other systems. These geosynchronous satellites will utilize super high

COVER: The first launch of the Trident missile on Jan. 18, 1977 from a flat pad at Cape Canaveral.

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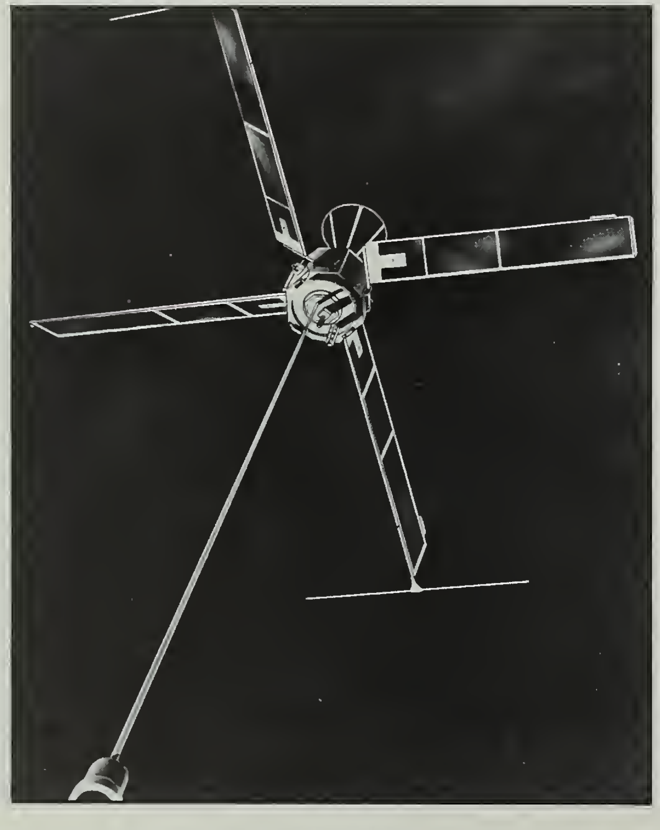
Satellite communications are used to interconnect Navy forces at sea and provide links to Navy shore terminals. Satellites such as this one are used to provide worldwide coverage by the Navy Navigation Satellite System.



frequency (SHF) for relay between relatively high capacity earth terminals. By 1978, this system will consist of four operational and two on-orbit spare satellites and will satisfy communications requirements for DoD users. Until such time as the system is complete, deficiencies will be made up by a partial capability of one existing satellite and through the utilization of capacity aboard United Kingdom and NATO spacecraft.

In the final stages of development and/or build-up are spacecraft and terminals for two other separate satellite systems with launches now scheduled for this year.

The Fleet Satellite Communications System will employ equatorial synchronous satellites utilizing both SHF and ultra high frequency (UHF) to interconnect Navy forces at sea, provide links to Navy shore terminals, and host space segments of the Air Force satellite communication system. Interim satellite service is being provided through the lease of transponders on three commercial UHF satellites. This interim UHF capability is called Gapfiller.

The Air Force Satellite Communications System, consisting of a communications relay capability in the geostationary aircraft and host satellites in near polar orbits, will provide a low-data rate, teletype service to improve worldwide command and control between selected strategic force elements and ground or airborne command posts. Terminals will be configured to operate on UHF and will be installed in the majority of SAC bomber aircraft and ICBM launch command posts as well as the airborne and ground command posts.

Tactical satellite communications support for selected ground mobile forces will be provided by highly mobile terminals that will share in the use of the space segment capacity of the UHF and SHF military satellite communications systems.

Russian navigation satellites were first launched in 1967. Their principal mission appears to be support of naval users to determine their positions by correlating data transmitted from the satellites.

The U.S. presently employs a satellite navigation system known as TRANSIT principally for naval use. R&D is ongoing on the Global Positioning System (GPS), which is planned as a highly accurate positioning system capable of satisfying a broad spectrum of military and civilian requirements. Its design is intended to provide improved coverage and precision for positioning aircraft, artillery, ships, and other weapon delivery systems and for support of diverse military missions. The GPS should also provide a means for reversing the trend of proliferation of positioning and navigation systems.

The United States maintains a system of multiple components to provide missile surveillance, warning, and attack assessment.

The primary U.S. systems for warning of ICBM and SLBM launches remain the Early Warning Satellites and the Ballistic Missile Early Warning System (BMEWS). These are complemented by the SLBM detection and warning system and the Perimeter Acquisition Radar (PAR). An essential element in maintaining a credible deterrent is the capability to provide the National Command Authorities (NCA) with continuous and real time answers to the questions: Is there an attack against the United States? How large is the attack? What are the targets? No single system can be depended upon to provide detailed information throughout an attack. Tactical warning and attack characterization of ICBM and SLBM attacks are necessary to maximize the survivability of strategic forces and the time available for NCA decisions and actions. The addition of the PAR attack characterization system will make a significant contribution in discerning the nature of an attack, predicting damage assessment, and determining future options that may be taken by the NCA. Procurement continues on the SLBM radars which will replace the present obsolete SLBM detection and warning systems. The lack of a ballistic missile defense makes surveillance and attack warning even more essential to the NCA decisionmaking process.

We must increase our current capabilities. To provide at least single sensor coverage of all the potential SLBM launch areas, the satellites will be relocated.

The warning and characterization task of the U.S. BMEWS is being complicated by mobile Soviet ICBMs, MIRVs and other sophistications. Additional accurate data must be collected and analyzed within the same time constraints as now exist in order to characterize adequately an offensive Soviet missile launch. Upgrading and improvements to the BMEWS are planned to provide improved RV counts, accurate missile impact prediction, and attack assessment.

PRC Strategic Forces

The Chinese now have a limited capability for nuclear strikes by missiles and bombers around the periphery of the People's Republic of China (PRC). Their capacity to produce fissionable materials is expanding. They recently conducted a four-megaton test, their largest to date. Presently, the Chinese have no capability to attack the continental United States and will not have the weapons to do so for at least several years.

Over the past year, Chinese surface-to-surface missile and related programs have exhibited increased activity. In addition, there has been related activity involving the launching of satellites. This activity, surely the result of long established programs, suggests a continuing emphasis by the Chinese on developing strategic missile and space programs.

The People's Republic of China has made a substantial investment in research, developmental testing, and production facilities for both liquid and solid propellant missile systems. Although the Chinese have not yet flight tested a solid propellant ballistic missile, they continue to expand their solid propellant rocket motor facilities. We believe they will eventually develop solid propellant ballistic missile systems.

PRC Land-Based Strategic Ballistic Missiles

The CSS-1 MRBM can reach targets in the Eastern Soviet Union, peripheral nations, and some U.S. bases in the Far East. The deployed force has not increased significantly since 1972.

CSS-2 missiles are currently deployed in China and the number is expected to remain the same. As currently deployed, it can reach targets in Central and Eastern Asia.

The CSS-3 limited range ICBM system was flight tested in 1976. It appears that while the People's Republic of China has not abandoned the program, it plans to deploy the system in only limited numbers. This missile would give the PRC a limited capability to cover targets in Asia and parts of the European Union of Soviet Socialist Republics (USSR), the Marianas, Australia, and portions of the Middle East, but not the United States.

The CSS-X-4 is the PRC's only full range ICBM with a potential to hit continental U.S. targets. It is in the same class as the U.S. Titan and the Soviet SS-9.

Full flight testing of this missile will require launches to an open ocean impact area, probably in the Pacific. Analysis of such launches will provide much more data about characteristics of the system than we now have. The PRC could have a small number of the CSS-X-4s deployed by the early 1980s.

We are convinced that the PRC is determined to develop a submarine-launched ballistic missile and a modern nuclear powered ballistic missile submarine. The first-generation Chinese SLBM will probably be a two-stage solid propellant system comparable in size and capability to the early U.S. Polaris missile.

The PRC strategic nuclear bomber force remains outmoded when compared to that of the United States and USSR. It is useful only for regional operations against Eastern and Southern Asia and against Japan and the Western Pacific islands.

PRC production of the TU-16 jet intermediate-range

The PRC operational home defense interceptor force of about 4,000 aircraft includes the MIG-21, as well as the MIG-15/17 and 19.

bomber began in 1968. Although no radical changes to the Badger basic design are expected, we believe that limited production of electronic counter measures (ECM), reconnaissance, or tanker variants could be initiated at any time. An air-to-surface missile carrier still remains a possibility in the future.

The IL-28 twin-jet, medium-range bomber is an old bomber but the PRC military planners still appear to consider it an important weapon system. Four hundred IL-28s are now operational; the number, if any, configured for nuclear weapons delivery is unknown. Staging from IL-28 capable airfields closest to the border areas would permit strategic operations against portions of the Soviet Union, all of South Korea, almost all of Vietnam, and parts of India. The limited range of the aircraft suggests that it also might be used in a theater support role within the PRC.

There continues to be no indication of any PRC effort to develop an ABM system.

The PRC's air defense system remains subject to major weaknesses, including the severe shortage of all-weather interceptors, a limited number of SAM sites, and an outmoded air defense command and control system.

The PRC operational home defense interceptor force of about 4,000 aircraft includes MIG-15/17s, MIG-19s, and MIG-21s. The Chinese are now developing a new all-weather interceptor of indigenous design.

The CSA-1, a Chinese variant of the Soviet SA-2 missile, remains the basic PRC operational SAM system. The PRC SAM System is a relatively thin, well organized defense, but far short of the massive system deployed by the Soviet Union. The PRC has also deployed thousands of antiaircraft aritllery pieces to defend key military and industrial facilities and major population centers. These weapons, which range from 37 to 100 mm, are carefully located.

China's space program remains in the developmental stage. The Chinese have, however, successfully orbited a small number of satellites in six years. China's space program has two primary objectives—to enhance their defense posture and to increase prestige abroad, particularly among Third World countries.

Summary of the Overall Strategic Balance

The preceding sections have provided factual and meaningful comparisons placing similar weapon systems into a balanced perspective. While these comparisons provide a useful starting point, an overall assessment must go beyond individual qualitative and quantitative factors. In this context, it is seen that the character of Soviet strategic development programs and growth in their strategic capabilities indicates continued preoccupation with nuclear conflict.

Last year I said that the available data led me to conclude that from our perspective, the Soviet strategic programs went well beyond the minimum requirements for deterrence. Evidence acquired during the past year strengthens this view, and I now believe the Soviets are striving to achieve warfighting capabilities which, if war occurred, could leave them in the better relative position.

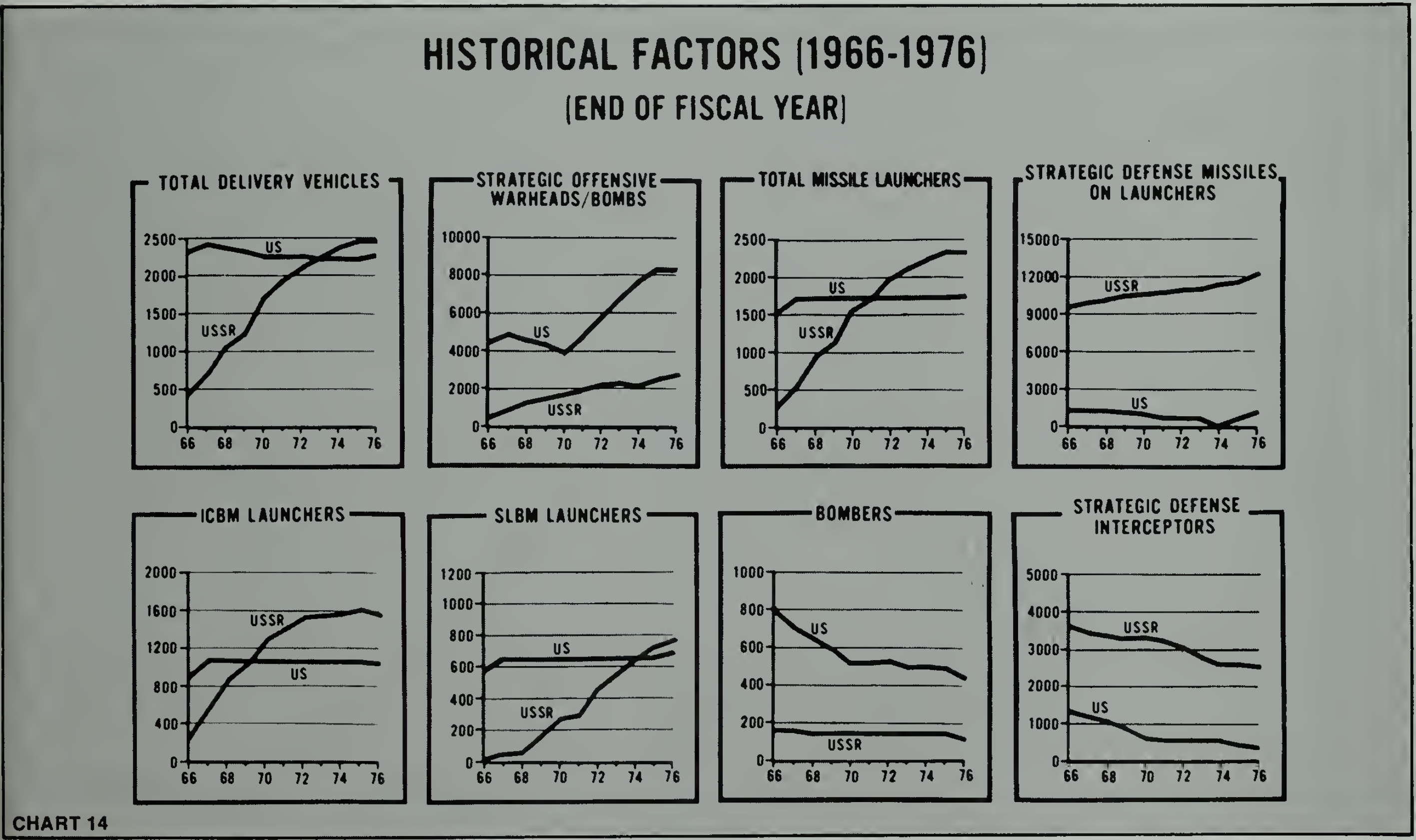
The United States has the advantage in our superior bomber force, in more independently targetable reentry vehicles, and in deliverable warheads with superior guidance systems. The Soviets continue their advantage in larger numbers of ballistic missiles, in greater megatonnage and throw-weight, in more air defense radars, in surface-to-air missiles, in air defense interceptors and in civil defense.

Space is rapidly becoming a strategic arena. Recently, international considerations have required the United States to close down or relocate important facilities in Turkey and Thailand. This highlights the problems associated with foreign land-based systems, causing us to look to space for more dependable, accessible, and survivable locations from which we can detect hostile action.

The scope and pace of the Soviet strategic programs demonstrate an increasing momentum in R&D and technology investment. If a SAL II agreement is not reached, the Soviets could build up their strategic forces without dramatically altering the pace and scope of their strategic force modernization programs. Even more important than what is happening today are the trends leading to tomorrow. Today the United States retains its lead in technology and R&D but again we see this lead diminishing. Accordingly, the Soviet Union's extensive program demands close watching; and U.S. research and development programs must be continued at a high level.

Over the years, we have gone from a monopoly in nuclear forces, to a predominance, to what is now described as rough equivalence. We must have no illusions—the margin of deterrence has dramatically narrowed.

When considering the existing balance and the potential for a shift, our defense must not be predicated on intentions of a potential adversary but upon demonstrated and manifested capabilities. It is



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upon this premise that we have designed our strategic programs.

Under a strategic arms agreement, we would foresee the Soviets maintaining a stable quantity of offensive and defensive forces, but with significant qualitative improvements. Specifically:

- Increases in missile accuracy will improve Soviet hard target capabilities;
- Larger numbers of nuclear warheads and weapons and improvements in control and targeting will greatly increase Soviet flexibility;
- Increased ranges and MIRVs for Soviet SLBMs will permit deployment of larger numbers of warheads out of range of major US ASW assets;
- Development of improved Soviet SAMs and interceptors with better look-down shoot-down capabilities will increasingly threaten our bomber's ability to penetrate the Soviet Union;
- Increased hardening of Soviet forces and command and control systems together with civil defense efforts will improve survivability of key elements of Soviet society;
- Massive Soviet R&D efforts will improve existing systems and enhance chances of significant breakthroughs in new antisatellites, ASW, and other areas.

To meet these challenges, the United States must diligently pursue improvements in our own strategic forces; the Minuteman, development of the MX ICBM, the Trident, B-1 and cruise missiles. Each of these programs will contribute significantly to the complementary mix of weapon systems in the U.S. nuclear TRIAD that has proved effective in deterring nuclear warfare.

Should we delay initiation of currently recommended strategic programs, we increase the risk to the United States. While negotiations on limitations of strategic nuclear forces continue, it is essential that the United States continue the currently recommended strategic programs until we conclude satisfactory negotiations and equitable agreement on strategic arms limitations. In short, the recommended improvements to our existing weapon systems should enable us to maintain a rough equivalence of strategic nuclear power with the Soviet Union.

WHO'S NEWS IN DEFENSE

Promotions

Nominated for vice admiral is RADM Donald H. Engen, USN, Assistant Deputy Chief of Naval Operations for Plans, Policy, and Operations, and reassigned as Deputy Commander-in-Chief and Chief of Staff, Atlantic and U.S. Atlantic Fleet.

Assignments

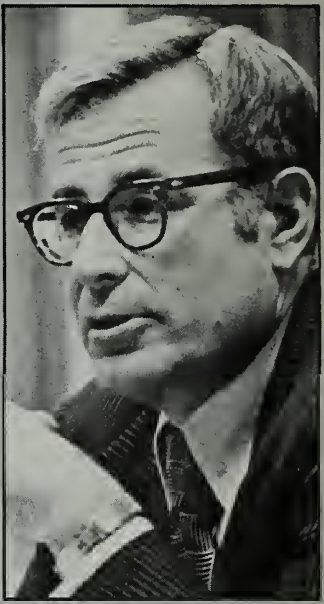
Air National Guard Maj. Gen. Richard L. Frymire Jr., (Kentucky) has been assigned to a three-year term as member of DoD's Reserve Forces Policy Board, a statutory body acting through the Assistant Secretary of Defense (Manpower & Reserve Affairs) to advise the Secretary of Defense on Reserve matters.

Also named to the Reserve Forces Policy Board for a three-year term, was RADM Stephen T. Quigley, U.S. Navy Reserve. Quigley is public relations director of the American Chemical Society in Washington.

Army Brig. Gen. John C. Bard has been assigned as Commandant of Cadets at the U.S. Military Academy, West Point.

Honors

Lt. Gen. James T. Stewart, USAF (Ret.), former commander of the Air Force Aeronautical Systems Division at Wright-Patterson AFB, Ohio, has received the Eugene M. Zuckert Management Award for 1976.



DR. HAROLD BROWN

New Defense Secretary

Dr. Harold Brown became the 14th Secretary of Defense when he took the oath of office on Jan. 21, 1977.

One of President Jimmy Carter's first acts on his Inauguration Day was to submit formally to the Senate Dr. Brown's nomination which was confirmed the same day.

Both Dr. Brown and Charles W. Duncan Jr., who has been designated to be the Principal Deputy Secretary of Defense, had appeared before the Senate Armed Services Committee earlier, following President Carter's announcement to nominate them on Dec. 22, 1976.

Retirements

VADM Marmaduke C. Bayne, USN, President of the National Defense University on Feb. 1.

Gen. John R. Deane, Jr. USA, commanding general, United States Army Materiel Development and Readiness Command.

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